Interview Summary	Application No.	Applicant(s)	
	09/871,777	KOSANOVIC, BOGDAN	
	Examiner	Art Unit	
	Jennifer N. To	2195	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Jennifer N. To*. (3)_____.

(2) *Ken Sheets*. (4)_____.

Date of Interview: *24 October 2006*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☐ No.
If Yes, brief description: _____.

Claim(s) discussed: *35,46 and 53*.

Identification of prior art discussed: _____.

Agreement with respect to the claims f)☒ was reached. g)☐ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *Applicant agreed to amend the claims accordance to examiner amendment by faxing the amended claims to examiner*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

MENG-AL T. AN
SUPERVISORY PATENT EXAMINER

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

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FACSIMILE COVER PAGE

From: Ken Sheets, Reg. 47,077, Counsel for Applicant

To: Examiner To, Fax. No. 571-273-7212

Re: 09/871,777 METHOD FOR RESOURCE MANAGEMENT IN A REAL-TIME EMBEDDED SYSTEM, Inventor: Bogdan Kosanovic, Docket No. TI-32882

Date: October 24, 2006

Total Pages Including Cover: 9

Examiner To:

According to our conversation today, we submit the following amendments to the claims for application 09/871,777 for an Examiner's amendment. Please contact me at 703-489-8937 at any time to discuss this further.

best regards,

Ken Sheets

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Claims 1-34 cancelled.

35. (Currently Amended) ~~A method of managing digital signal processing in a single processor when inadequate processing resources are available in the processor to execute functions of a software process in a time period, comprising:~~
~~providing a plurality of channels in a processor;~~

~~executing providing a plurality of functions of an adaptive algorithm in the software process algorithms in one or more said channels that use the processing resources of the processor, wherein an execution of each function is manageable;~~
~~fixing a high usage threshold of the processing resources for use by the algorithms;~~
~~exceeding, or anticipating the exceedance of, the high usage threshold by said executing of the algorithms; and~~

~~allocating the processing resources among the algorithms each function based on an estimated use of the processing resources by each function algorithm and an achieved performance of each algorithm function so as not to exceed the high usage threshold by a cumulative use of the processing resources available in the processor in a time period by the executing algorithms; and~~
~~controlling the execution of each function according to the allocation of the processing resources.~~

A method of managing digital signal processing in a single processor when adequate processing resources are not available in the single processor to execute functions of a software process in a predetermined time period, comprising the steps of:

providing a plurality of functions of an adaptive algorithm in the software process that use the processing resources of the processor, wherein an execution of each function is manageable by:
providing an estimate of maximum and minimum processing resources required for execution of each function,
storing the estimate of maximum and minimum processing resources required for execution of each said function,
monitoring actual use of the processing resources by the execution of each said function, and
providing an estimated consumption for each said function based on the estimate and the actual use of the processing resources;

allocating the processing resources among each function based on the estimated consumption of the processing resources by each said function, an achieved performance of each function so as not to exceed the stored estimate maximum and minimum

processing resources required, and the processing resources available in the processor in said predetermined time period; and

controlling the execution of each said function according to the allocation of the processing resources, wherein said allocating further comprises removing a portion of the allocated processing resources from each manageable function that can execute using fewer processing resources than were initially allocating during said predetermined time period.

36. (Currently Amended) ~~The method of claim 35, wherein said allocating further comprises:~~

~~allocating the processing resources among the algorithms each function based on an environmental input.~~

The method of claim 35, wherein the step of allocating further comprises the step of allocating the processing resources among each said function based on an environmental input.

37. (Currently Amended) ~~The method of claim 35, wherein said allocating comprises prioritizing the allocation of the processing resources among the algorithms that exhibit greater requirements for processing resources each function based on the estimated use of the processing resources by each algorithm function and the achieved performance of each algorithm function according to a hierarchical priority scheme.~~

The method of claim 35 further comprising the step of prioritizing the allocation of the processing resources among each said function based on the estimated consumption of the processing resources by each said function and the achieved performance of each function according to a hierarchical priority scheme.

38. (Currently Amended) ~~The method of claim 35, wherein said allocating further comprises de-prioritizing prioritizing the allocation of the processing resources among the algorithms that exhibit lesser requirements for processing resources each function based on the estimated use of the processing resources by each algorithm function and the achieved performance of each algorithm function according to a round-robin priority scheme~~.

The method of claim 35 further comprising the step of prioritizing the allocation of the processing resources among each said function based on the estimated consumption of the processing resources by each said function and the achieved performance of each function according to a round-robin priority scheme.

Claim 39 cancelled.

40. (Currently Amended) ~~The method of claim 35, wherein the controlling further comprising: comprises performing re-allocation of fewer of the processing resources to~~

~~each of the functions that are manageable for performance-degrading execution when a cumulative amount of the processing resources are required that would exceed the high usage threshold~~.

The method of claim 35, wherein the step of controlling further comprises the step of performing re-allocation of fewer of the processing resources to each function of the plurality of functions that are manageable for performance-degrading execution.

41. (Currently Amended) ~~The method of claim 40, wherein said allocating further comprises setting a low usage threshold of the processing resources; and~~
~~re-allocating said more of the processing resources to the algorithms each performance-degraded function when a cumulative usage of said processing resources by the algorithms functions fall below said low usage threshold based on the estimated consumption of said processing resources by each algorithm function and the achieved performance of each algorithm function.~~

The method of claim 40, wherein the step of allocating further comprises the steps of:
setting a low usage threshold of the processing resources; and
re-allocating more of the processing resources to each performance-degraded function when a cumulative usage of said processing resources by the plurality of functions fall below said low usage threshold based on the estimated consumption of said processing resources by each function and the achieved performance of each function.

42. (Currently Amended) ~~The method of claim 35, wherein said controlling comprises one of enabling each function for executing, the plurality of algorithms comprises executing one or more function of each algorithm that are capable of being managed disabling to prevent execution, and degrading execution by allocating fewer processing resources if the function is capable of performance-degraded execution.~~

The method of claim 35 further comprising the step of controlling each said function by one of enabling each said function for executing, disabling each said function to prevent execution, and degrading execution by allocating fewer processing resources if said each function is capable of performance-degraded execution.

Claims 43-44 cancelled.

45. (Currently Amended) ~~The method of claim 35, wherein the controlling plurality of comprises executing a one or more controlling the execution of the plurality of functions of each the algorithm concurrently without executing any function on an additional processor.~~

The method of claim 35, wherein the step of controlling further comprises controlling of the plurality of functions of the adaptive algorithm without executing any function on an additional processor.

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46 (Currently Amended). ~~A system of processing resource management in a single processor when inadequate processing resources are available in the processor to execute functions of a software process in a time period, comprising:~~

~~a plurality of communication channels that convey signals;~~

~~a processor, operably connected to the communication channels, that receives the signals from the communication channels and is programmed to:~~

~~execute provide a plurality of functions of an adaptive algorithm algorithms, using that use processing resources of the processor , in one or more digital channels , wherein the execution of each function is manageable;~~
~~maintain a high usage threshold of the processing resources used by the algorithms; and~~

~~when the use of the processing resources by the execution of the algorithms is anticipated to exceed or exceeds the high usage threshold,~~

~~allocate the processing resources among the algorithms each function based on an estimated use of the processing resources by each algorithm function and an achieved performance of each algorithm function so as not to exceed the processing resources available in the processor in a time period; and~~

~~controlling an execution of each function according to the allocation of the processing resources.~~

A system for managing digital signal processing in a single processor when adequate processing resources are not available in the single processor to execute functions of a software process in a predetermined time period, comprising:

a plurality of communication channels that convey signals; and

a processor, operably connected to the plurality of communication channels, that receives the signals from the communication channels and is programmed to perform the steps of:

providing a plurality of functions of an adaptive algorithm in the software process that use the processing resources of the processor, wherein an execution of each function is manageable by:

providing an estimate of maximum and minimum processing resources required for execution of each function,

storing the estimate of maximum and minimum processing resources required for execution of each said function,

monitoring actual use of the processing resources by the execution of each said function, and

providing an estimated consumption for each said function based on the estimate and the actual use of the processing resources;

allocating the processing resources among each function based on the estimated consumption of the processing resources by each said function, an achieved performance of each function so as not to exceed the stored estimate maximum and minimum processing resources required, and the processing resources available in the processor in said predetermined time period; and

controlling the execution of each said function according to the allocation of the processing resources, wherein said allocating further comprises removing a portion of the allocated processing resources from each manageable function that can execute using fewer processing resources than were initially allocating during said predetermined time period.

47 (Currently Amended). ~~The system of claim 46, wherein the processor is further programmed to:~~

~~allocate the processing resources among the algorithms each function based on an environmental input.~~

The system of claim 46, wherein the processor is further programmed to perform the following step of allocating the processing resources among each said function based on an environmental input.

48. (Currently Amended) ~~The system of claim [[46]] 47, wherein the processor is further programmed to:~~

~~prioritize allocation of the processing resources among the algorithms that exhibit greater requirements for processing resources each function based on the estimated use of processing resources by each algorithm function, the environmental input, and the achieved performance of each algorithm function according to a hierarchical priority scheme.~~

The system of claim 46 wherein the processor is further programmed to perform the step of prioritizing the allocation of the processing resources among each said function based on the estimated consumption of the processing resources by each said function and the achieved performance of each function according to a hierarchical priority scheme.

49. (Currently Amended) ~~The system of claim 48, wherein the processor is further programmed to:~~

~~de prioritize prioritize the allocation of the processing resources among the algorithms that exhibit greater requirements for processing resources each function based on the estimated use of processing resources by each algorithm function, the environmental input, and the achieved performance of each algorithm function according to a round robin priority scheme.~~

The system of claim 46, wherein the processor is further programmed to perform the step of prioritizing the allocation of the processing resources among each said function based on the estimated consumption of the processing resources by each said function and the achieved performance of each function according to a round-robin priority scheme.

50 (cancelled).

51 (Currently Amended). ~~The system of claim [[46]] 50, wherein the processor is further programmed to:~~

~~maintain set a low usage threshold of the processing resources; and~~

~~re-allocate the processing resources to the algorithms each performance-degraded function when a cumulative usage of said processing resources by the algorithms functions fall below said low usage threshold based on the estimated consumption of said processing resources by each algorithm function, the environmental input, and the achieved performance of each algorithm function.~~

The system of claim 46, wherein the processor is further programmed to perform the steps of setting a low usage threshold of the processing resources; and

re-allocating more of the processing resources to each performance-degraded function when a cumulative usage of said processing resources by the plurality of functions fall below said low usage threshold based on the estimated consumption of said processing resources by each function and the achieved performance of each function.

52 (Currently Amended). ~~The system of claim 46, wherein the processor is further programmed to:~~

~~allocate the processing resources among one or more functions of each algorithm that are control each function by one of enabling each function for executing, disabling to prevent execution, and degrading execution by allocating fewer processing resources if the function capable of being managed for performance-degraded execution.~~

The system of claim 46, wherein the processor is further programmed to perform the step of controlling each said function by one of enabling each said function for executing, disabling each said function to prevent execution, and degrading execution by allocating fewer processing resources if said each function is capable of performance-degraded execution.

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53. (Currently Amended). ~~A method of resource management in a single processor having multiple communication channels when inadequate processing resources are available in the processor to execute functions of a software process in a time period, comprising:~~

~~estimating a processing resource consumption of a plurality of functions of one or more adaptive algorithms that are in a queue waiting to be executed, wherein an execution of each function is manageable;~~
~~executing the functions in one or more of the channels;~~

~~if a cumulative execution of the functions is anticipated to exceed a high processing resource usage threshold for the processor, then allocating the processing resources to each function according to the estimated use of the processing resources for each function, an achieved performance of each function, and an environmental condition so as to not exceed the available processing resource usage threshold resources of the processor in a time period.~~

A method of resource management in a single processor having multiple communication channels when adequate processing resources are not available in the single processor to execute functions of a software process in a predetermined time period, comprising the steps of:

estimating a processing resource consumption of a plurality of functions of one or more adaptive algorithms that are waiting to be executed, wherein an execution of each said function is manageable by:
providing an estimate of maximum and minimum processing resources required for execution of each function,
storing the estimate of maximum and minimum processing resources required for execution of each said function,
monitoring actual use of the processing resources by the execution of each said function, and
providing the estimated consumption for each said function based on the estimate and the actual use of the processing resources;

allocating the processing resources to each said function according to the estimated consumption of the processing resources for each said function, an achieved performance of each function, and an environmental condition so as not to exceed the available processing resources of the single processor in said predetermined time period; and

performing re-allocation of fewer of the processing resources to each of the functions that are manageable for performance-degrading execution.

Claim 54 (cancelled).

55. (Currently Amended) ~~The method of claim 53, further comprising:~~

~~controlling execution of each function by one of enabling for execution, disabling to prevent execution, and degrading execution by allocating fewer processing resources if the function is capable of performance-degraded execution.~~

The method of claim 53 further comprises the step of controlling execution of each function by one of enabling each said function for executing, disabling each said function to prevent execution, and degrading execution by allocating fewer processing resources if said each function is capable of performance-degraded execution.